

CLAIMS

1. Hinge assembly (1) for the articulated connection of a vertically opening panel (2) to a furniture element (3) between a closing position and an opening position in which the panel (2) is at least partially lifted with respect to the hinge assembly (1) and to the furniture element (3), comprising:

- a supporting base (6);

- a lifting lever (7) operatively connected to the panel (2) and hinged to the supporting base (6) about a pivoting axis (P1-P1) between said closing and opening positions of the panel (2);

- a balancing device (10) acting on the lifting lever (7) to at least partially counterbalance the weight of the panel (2) during rotation of the lever (7) about said pivoting axis (P1-P1);

characterized in that in the mounting position of the hinge assembly (1) the pivoting axis (P1-P1) of the lifting lever (7) and said balancing device (10) are positioned above an upper surface (4a) of the furniture element (3).

2. Hinge assembly (1) according to claim 1, wherein said balancing device (10) and said lifting lever (7) are mounted above said supporting base (6).

3. Hinge assembly (1) according to claim 1, wherein said lifting lever (7) is operatively connected to the panel (2) by means of at least one fastening element (8) associated to the lifting lever (7) by means of a connecting arm (32).

4. Hinge assembly (1) according to claim 3, wherein said at least one fastening element (8) is constituted by a portion of the connecting arm (32) distal with respect to the lifting lever (7).

5. Hinge assembly (1) according to claim 3, wherein the lifting lever (7) is provided with hooking means (33) adapted to cooperate with a portion of the connecting arm (32) proximal to the lever (7).

6. Hinge assembly (1) according to claim 3, wherein the connecting arm (32) is integrally formed with the lifting lever (7).

7. Hinge assembly (1) according to claim 1 or 4, wherein said at least one fastening element (8) is constituted by a substantially plate-shaped element adapted to be laterally

- 28 -

associated to the panel (2) at an upper end (2a) thereof.

8. Hinge assembly (1) according to claim 1, wherein the balancing device (10) comprises a spring group (43) adapted to exert a thrusting action on the lifting lever (7) to at least partially counterbalance the weight of the panel (2) during rotation of the lifting lever (7) about said pivoting axis (P1-P1).

9. Hinge assembly (1) according to claim 8, wherein said spring group (43) comprises at least one spring (44, 81, 82) received in a hollow supporting body (45, 78).

10. Hinge assembly (1) according to claim 9, wherein said hollow body (45) is hinged to the supporting base (6) at an end of the hollow body (45) distal with respect to the lifting lever (7).

11. Hinge assembly (1) according to claim 10, wherein said hollow body (45) is hinged to at least one supporting wall (12a, 12b) extending laterally to the supporting base (6).

12. Hinge assembly (1) according to claim 11, wherein said supporting wall (12a, 12b) integrally extends from the supporting base (6).

13. Hinge assembly (1) according to claim 1 or 8, wherein said balancing device (10) comprises an adjustment device (50) for adjusting the thrusting force exerted by the balancing device (10) on the lifting lever (7).

14. Hinge assembly (1) according to claims 9 and 13, wherein said adjustment device (50) comprises a cap (51, 87) for closing the distal end (45b, 78b) of the hollow body (45, 78), said cap being adjustably positionable along the axial direction and being adapted to cooperate in abutment relationship with a free end of said at least one spring (44, 81, 82).

15. Hinge assembly (1) according to claim 14, further comprising at least one abutment element (54a, 54b, 90) adapted to limit the extraction of the closing cap (51) from the distal end (45b, 78b) of the hollow body (45, 78) housing said at least one spring (44, 81, 82).

16. Hinge assembly (1) according to claim 15, wherein said at least one abutment element (54a, 54b) integrally extends from the supporting base (6).

17. Hinge assembly (1) according to claim 15, wherein said at least one abutment element (90) is constituted by an adjustment screw rotatably mounted in the lifting lever (7) and cooperating in abutment relationship with the closing cap (87) of the hollow

body (78).

18. Hinge assembly (1) according to claim 1 or 8, wherein said balancing device (10) is at least temporarily housed in a respective housing space (23) defined within the lifting lever (7) during rotation of the lifting lever (7) about said pivoting axis (P1-P1).

5 19. Hinge assembly (1) according to claim 18, wherein said spring group (43) is slidably mounted in said housing space (23) defined within the lifting lever (7).

20. Hinge assembly (1) according to claim 19, wherein the hollow supporting body (78) of the spring group (43) is provided with a roller (83) rotatably mounted at an end of the hollow body (78a) proximal to the pivoting axis (P1-P1) of the lifting lever (7).

10 21. Hinge assembly (1) according to claim 20, wherein said roller (83) is urged by said at least one coil spring (81, 82) towards a cam element (75) shaped so that the thrust exerted by the balancing device (10) on the lifting lever (7) is capable to at least partially counterbalance the weight of the panel (2) during rotation of the lever (7) about said pivoting axis (P1-P1).

15 22. Hinge assembly (1) according to claim 21, wherein said cam element (75) is mounted on said supporting base (6) close to the pivoting axis (P1-P1) of the lifting lever (7).

20 23. Hinge assembly (1) according to claim 9, wherein said spring group (43) comprises at least one pushing element (59) slidably mounted in said hollow supporting body (45) and urged by said at least one spring (44) towards the lifting lever (7).

24. Hinge assembly (1) according to claim 9 or 23, wherein said spring group (43) comprises at least one spring-guiding stem (60, 88, 89) extending from said closing cap (51, 87) of the hollow body (45, 78) and/or from said pushing element (59).

25 25. Hinge assembly (1) according to claim 1, further comprising an angular adjustment device (27) for adjusting the angular position of the direction of thrust (S) exerted by the balancing device (10) on the lifting lever (7) with respect to a dead centre plane (π) passing through a pivoting axis (P2-P2) of the balancing device (10) and through the pivoting axis (P1-P1) of said lever (7).

30 26. Hinge assembly (1) according to claim 25, wherein said angular adjustment device (27) comprises a supporting body (58) hinged to the supporting base (6) about the pivoting axis (P1-P1) of the lifting lever (7) and operatively arranged between said lever

(7) and the balancing device (10).

27. Hinge assembly (1) according to claim 26, wherein the supporting body (58) of the angular adjustment device (27) is angularly displaceable with respect to the lifting lever (7).

5 28. Hinge assembly (1) according to claim 26 or 27, wherein the angular adjustment device (27) comprises adjustment means (61) for regulating in an adjustable manner the angular position of said supporting body (58) with respect to the lifting lever (7).

29. Hinge assembly (1) according to claim 26 or 27, further comprising abutment means (28, 29, 31) for limiting the angular displacement of the angular adjustment device (27)
10 with respect to the lifting lever (7).

30. Hinge assembly (1) according to claim 26, wherein the balancing device (10) acts upon a pin (64) transversely mounted in said angular adjustment device (27).

31. Hinge assembly (1) according to claims 9 and 30, wherein said pin (64) is slidably mounted along the longitudinal direction in an end of the hollow body (45) proximal to the lifting lever (7) of the balancing device (10) during rotation of the lifting lever (7)
15 about the pivoting axis (P1-P1) thereof.

32. Hinge assembly (1) according to claim 31, wherein the hollow body (45) of the balancing device (10) is provided with means (67, 68) for guiding the axial sliding of said transversal pin (64).

20 33. Hinge assembly (1) according to claim 1 or 25, wherein the direction of thrust (S) exerted by the balancing device (10) forms an angle of from about 0° to about 30° with respect to said dead centre plane (π).

34. Hinge assembly (1) according to claim 25, wherein said angular adjustment device (27) is housed in a respective housing space (23) defined within the lifting lever (7).

25 35. Hinge assembly (1) according to claim 1, wherein said balancing device (10) comprises a motor group (95) acting on the lifting lever (7) to at least partially counterbalance the weight of the panel (2) during rotation of the lever (7) about said pivoting axis (P1-P1).

30 36. Hinge assembly (1) according to claim 1, further comprising friction means (102) to adjust the value of the lifting torque exerted by the lifting lever (7) to at least partially counterbalance the weight of the panel 2.

- 31 -

37. Furniture element (3) comprising a panel (2) articulated to the furniture element (3) by means of at least one hinge assembly (1) according to any one of the previous claims.

38. Furniture element (3) according to claim 37, wherein said at least one hinge assembly (1) is mounted above an upper surface (4a) of said element.

5 39. Furniture element (3) according to claim 37, wherein the hinge assembly (1) comprises a lifting lever (7) operatively associated to the panel (2) by means of at least one fastening element (8) associated to the panel (2) at an upper end (2a) thereof.

40. Furniture element (3) according to claim 39, wherein the fastening element (8) is constituted by a substantially plate-shaped element received in a respective housing seat
0 (19) laterally formed in the panel (2).